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French "quantifiers" in questions: interface strategies

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Abstract: Building on an experimental study, I show that homophonous wh-phrases like *qui* 'who' in French correlate with prosodic differences when specificity and partitivity come into play, something not found with bare Universal Quantifiers like *chacun* 'each' and *tous* 'all'. Rather than homophony I claim that these wh-phrases are syncretic. I show that (a) wh-phrases and bare Universal Quantifiers are complex phrases, lexicalizing structures of different sizes; (b) partitivity and specificity are syntactic features. This last claim is supported by intervention effects: the interventions observed with negative and scope islands with wh-phrases in-situ are accounted for in terms of a feature-based Relativized Minimality (Starke 2001; Rizzi 2004).

Keywords: nanosyntax; prosody; existential presupposition; Relativized Minimality; quantifiers

1. Introduction

The term *existential presupposition* (EP) is generally attributed to special types of noun phrases, which are interpreted as taking wide scope. Typically, wh-phrases can be **d-linked** (Pesetsky 1987) when they are extracted out of weak islands (WIs); French *wh* in-situ must be 'presupposed' (Boeckx 1999; Cheng & Rooryck 2000; Mathieu 2002, among others); indefinites get a 'strong' (Milsark 1974), a 'familiar' (Heim 1982), a 'referential' (Fodor & Sag 1982), a 'partitive' (Enç 1991) or a 'presuppositional' (Diesing 1992) reading when they take wide scope. For Horn (1997), Universal Quantifiers are also presupposed, because they are interpreted with non-empty restrictions: they quantify over contextually given sets (see also Enç 1991; Giannakidou 2006). In this paper, I investigate the notion of EP with Quantifiers of different kinds: wh-phrases (*qui* 'who', *quoi* 'what', *quel N* 'which N') and Universal Quantifiers (*chacun des N* 'each of the N' vs. *tous les N* 'all of the N'). As for wh-phrases, I will focus my attention to wh-phrases in-situ, as they have often been claimed to be existentially presupposed. With the help of semantics, prosody and syntax, I argue that there are two types of presupposed noun phrases (i.e., already introduced in the discourse): **partitive** and **specific** (see Baunaz 2011; 2015). Both spe-

cific and partitive noun phrases require contextually specified domains (as opposed to *out of the blue* contexts), that will be defined in section 2 for wh-phrases, and section 3 for Universal Quantifiers. Building on an experimental study on French prosody, I show in this paper that homophonous wh-phrases like *qui* 'who' and *quoi* 'what' correlate with prosodic differences when specificity and partitivity come into play (section 2, see Baunaz & Patin 2011; 2012), something not found with Universal Quantifiers (section 3, see Baunaz 2011) like *chacun des N* 'each of the N' and *tous les N* 'all the N'. I claim that this homophony is only apparent, and that these wh-phrases should rather be considered as being syncretic, where a syncretism is when a single morpho-phonological form occurs in more than one morphosyntactic environment (Caha 2009, 6). Thanks to syncretism patterns and compositionality of semantics I also show that (a) wh-phrases like *qui* 'who', *quoi* 'what' *quel* 'which' or *comment* 'how' and bare Universal Quantifiers like *chacun* 'each' and *tous* 'all' (henceforth Universal Qs)[1] are complex phrases, lexicalizing structures of different sizes; (b) partitivity and specificity are syntactically active features. (b) is supported by intervention effects. The intervention effects observed with weak and scope islands will be accounted for in terms of a feature-based Relativized Minimality (Starke 2001; Rizzi 2004; 2013; Haegeman & Ürögdi 2010), (section 5).

1.1. Nanosyntax

This research (Starke 2009; 2011; Caha 2009, Baunaz & Lander submitted a, among others) is set within the nanosyntactic approach to grammar, a direct descendant of cartography, which studies the fine-grained structures of morphemes. It is based on the reasoning that the general trend of the proliferation of syntactic projections and the atomization of heads in the cartographic approach – i.e., the view that a single syntactico-semantic feature should correspond to a single head (Cinque & Rizzi 2010) – have an effect on the architecture and principles of grammar. Nanosyntax holds that every (morphosyntactic/semantic) feature is a syntactic head, and that morphemes can spell out a number of such heads at once, so heads (= features) are submorphemic entities and these heads are hierarchically

[1] In this paper, the term *Universal Q* refer to bare quantifiers, namely *chacun* and *tous.* The term *Universal Quantifier* refer to the complex QP involving an Universal Q **plus** a restriction. The term *Operator* in section 6 is used to refer to the quantificational part of a quantifier, i.e., *cha-* in *cha-c-un* is the universal part of the morpheme, it is thus the lexicalization of $Op_{\forall}$.

ordered according to the universal functional sequence (fseq) of syntax. Phrasal spellout is thus allowed, that is multiple features can be lexicalized at once.

In this framework lexical entries are stored with an inventory of features that must be lexicalized by appropriate material: the syntactic component builds morphemes and, after each step of the derivation, everything that has been built must be lexicalized by appropriate material in the Lexicon. Importantly a lexical entry can be associated to several s(yntactic) trees: in cases of syncretism, a single lexical entry will map onto a range of S-tree.

The basic tools used to elucidate the fine-grained structure of languages are the following: (i) compositionality of semantics; (ii) syncretism; (iii) morphological containment. This research aims at studying the fine-grained structure of wh-words like *qui* 'who', *quoi* 'what', *quel* 'which', and Universal words like *chacun* 'each' and *tous* 'all' (= bare Universal Qs), decomposing them into discrete submorphemic properties, thanks to (i) (see sections 2–3) and (ii) (see section 4).

1.2. Relativized Minimality as a constraint on feature classes

Within the cartographic approach, terminals are atomized in such a way that they can be decomposed into features, as shown in (1). Observing that topics, quantifiers and arguments extractions are only blocked by features of the class they belong to, Rizzi (2004) proposes that RM exclusively operates on features of the same class and redefines it as a constraint on these classes (2) (see also Haegeman & Ürögdi 2010; Rizzi 2013, among others):

(1) a. Argumental: person, number, gender, case
b. Quantificational: Wh, Neg, measure, focus...
c. Modifier: evaluative, epistemic, Neg, frequentative, celerative, measure, manner...
d. Topic (Rizzi 2004)

(2) Y is in a Minimal Configuration with X iff there is no Z such that
i. Z is of the same structural type as X, and
ii. Z intervenes between X and Y. (Rizzi 2004)

Concentrating on wh-extractions for the moment, it is well known that extraction from WIs is only possible if the extracted wh-phrase comes with wide scope (Pesetsky 1987, among others). Decomposing the meaning

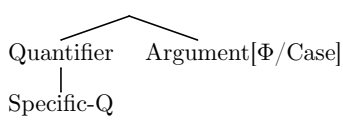
of these types of wh-phrases, Starke (2001) shows that the wh-extractee is in fact interpreted with wide scope of EP. In other words, in these situations where extraction out of WIs is tolerated, the wh-extractee has something more than its intervener (which in that case, does not intervene at all), (3b). The reverse is true too: if the intervener has something more than the wh-extractee, the latter is blocked, (4a). Following RM as defined in (2), if the intervener shares similar feature(s) with the wh-extractee, ungrammaticality results (3a), (4b). Starke only discusses wh-extractions across neg islands.

(3) a. $*\alpha_i \ldots \alpha_j \ldots \alpha_I$
b. $\alpha\beta \ldots \alpha \ldots \alpha\beta$
(Starke 2001, 8 (16))

(4) a. $*\alpha \ldots \alpha\beta \ldots \alpha$
b. $*\alpha\beta \ldots \alpha\beta \ldots \alpha\beta$
(*ibid.*, (17))

Wide scope of EP is defined by Starke as 'specificity'. He proposes the different types of movement can be hierarchically organised in the feature tree in (5), where nodes correspond to different types of movements (Q-movements, A-movement, etc.). In (5), the class of Qs dominates the feature 'Specific-Q', the latter belonging to the super class of Q.

(5) (Starke 2001, 26, (63))



(3)–(4) can be re-interpreted in terms of sub- and super-classes: only interveners from a super class (4a) or from a similar class (4b) intervene. Interveners from a subclass do not, (3b), (unless they belong to the same class as the extractee, (3a)). Super-classes ($\alpha\beta$) are absolute blockers, subclasses (α) selective blockers.

1.3. Data

In this paper, I develop Starke's (2001) approach and I show that once the prosodies of two types of Qs (wh, Universal) together with their syntax and semantics are taken into account, the feature tree in (5) can be augmented with an additional member, which dominates the class of Specific-Qs, but which is immediately dominated by the class of Quantifiers. To achieve this goal, we will need to look into more details into the syntax and semantics of wh phrases in-situ, and in particular, their interactions with other Qs.

Two types of data are taken into account: (i) introspective judgments. Syntactic and semantic judgments given by native speakers of French, from Switzerland (Geneva (7) and Neuchâtel (1)) and from France (Paris (1), Nantes (1), Lille (1) and Montpellier (1)), which correspond to those described in Starke (2001) and Adli (2006).[2] Each informant was asked to give judgements on sentences in particular contexts either orally or via a questionnaire. Intonation was mainly used as a diagnostic. (ii) A production experiment (partly described in Baunaz & Patin 2011; 2012), which took place on December 16, 2008 at the ILPGA (Université Paris 3). Seven participants were recorded, all native speakers of French. Only six were retained[3] (4 F, 2 M; age: from 23 to 31 years old). All of them were graduate students in linguistics at Université Paris 3. The participants were recorded with a Marantz PMD670 in a sound-attenuated room. The average duration of the experiment was thirty minutes by subject. The subjects were required to read sentences in dialogues, which were written on cardboards. The speakers were divided in two different groups. Each group was associated with a set of cards representing half of the sentences. Each set was repeated three times, in a semi-random order. Speakers were requested to use colloquial French, as "natural" as possible; repetitions were allowed, and regularly requested, in case of mistakes or sputtering. The experiment consisted of 32 sentences, built upon eight target sentences. The sentences varied depending on three parameters: (i) the polarity of the sentence (positive or negative); (ii) the place of the wh-word (in-situ or ex-situ); the form of the wh-word (*qui* 'who' vs. *quel N* 'which N'). There were no sentence-final wh-words. 60% of the experiment consisted of distractors. Among them, complex Universal Quantifiers of two types (*tous les N* 'all the N' and *chacun des N* 'each of the N') have been tested. Seven target sentences were used in contexts.

[2] While no description about the speakers consulted is mentioned in Starke's (2001) introspective study, Adli's (2006) experimental study consisted of a qualitative interview of 20 French native speakers. The experiment was carried out at the University of Paris Jussieu.

[3] The seventh speaker was younger than the other participants (13 years old), and had troubles performing the test.

2. Wh-phrases in-situ in French

Spoken French displays dual properties when it comes to question formation: instead of obligatorily moving a wh-phrase (as in English), French has the option of leaving it in-situ (as in Japanese), (6).[4]

(6) a. **Qui** as-tu vu? ex-situ
who have-you seen

b. T' as vu **qui**? in-situ
you have seen who
'Who did you see?'

If the distribution of moved wh-phrases is generally described in a homogeneous way, this is not the case for wh-phrases in-situ.[5] In this paper, I will describe the semantics, prosody and syntax of wh-phrases in-situ.

2.1. General properties

In the literature, French wh-phrases in-situ are said to be syntactically constrained to restricted contexts (Chang 1997; Boeckx 1999; Cheng & Rooryck 2000; Bošković 2000; Mathieu 2002): (i) they are restricted to root clauses; (ii) they cannot be moved out of infinitival CP-complements;

[4] The questions in (6) are not echo-questions, but information question. Echo-questions show different pragmatic, semantic and prosodic properties from information questions. They are requesting for confirmation, or repetition, "or a showing of politeness, or concern, or an expression of surprise or disbelief, or the like" (Boeckx 1999, 76). Echo wh-phrases involve specificity (see Starke 2001) and heavy stress (Mathieu 2002) or a "high + rising echo intonation" (Boeckx 1999, 76, see also Mathieu 2002).

[5] In Baunaz (2011), French is split into Non-Standard Colloquial (NSC) and Standard Colloquial French (SC). This distinction was based on the stable observation that the in-situ strategy is or is not a root phenomenon. A sentence like (i) is judged ungrammatical in Chang (1997); Boeckx (1999); Cheng & Rooryck (2000); Bošković (2000), but perfectly grammatical in Starke (2001); Adli (2006); Baunaz (2005; 2011); Oiry (2011):

(i) Tu crois qu'il a fait quoi?
you think that he has done what
'What do you think that he did?'

On this matter, one of the reviewers suggests that the distinction might simply not exist. In fact, despite much search, it is very difficult to find speakers of that dialect, and if it exists, it is certainly not standard. For that reason, I will not make the distinction here and will only focus on the data that I collected (see section 1.3).

(iii) depending on the author, they can occur with modals; (iv) they are blocked in negative islands; (v) they are trapped in scope islands (or at best they take narrowest scope, see Mathieu 2002); semantically, (vi) they must involve EP. Conversely, Starke (2001); Baunaz (2005; 2011); Adli (2006) observe that in informal spoken French, wh-phrases in-situ are productively used (i) in embedded clauses (7); (ii) with modals, (8)–(9); (iii) in neg-islands, (10); (iv) with Qs of various types (11), (12). Speakers judged (7)–(12) degraded compared to their fronted counterparts.[6]

(7) a. Tu crois que Pascal a invité qui/quelle fille?
you think that P. has invited whom/which girl
'Whom/Which girl do you think Pascal invited?'

b. Tu crois qu'il marche comment/où?
you think that he walks how/where
'How/Where do you think he walks?'

c. Marc a décidé de voir qui?
Marc has decided to see whom
'Who did Marc decide to see?'

(8) a. Il peut rencontrer qui?
he can meet who
'Who can he meet?' (Adli 2006, 16, (13))

b. Il peut/doit aller où?
he can/must go where
'Where can/must he go?' (*ibid.*, (14))

(9) a. Pascal peut/doit appeler qui/quelle fille?
Pascal can/must call who/which girl
'Which girl can/must P. call?'

[6] That there are two kinds of French in which the in-situ strategy applies differently is yet not clear at all (vs. Baunaz 2011): the type of French described by Chang (1997); Boeckx (1999); Cheng & Rooryck (2000); Bošković (2000); Mathieu (2002) is not uniform, and as such, non-standard, which confuses the matter: there are variations concerning the availability of wh-phrases in-situ in root infinitives, and with modals for instance. As suggested by one of the reviewers, these data might be inherited from old mistaken claims, and carried along in the more recent literature (cf. fn. 5). Judgments described by Starke (2001); Adli (2006) and Baunaz (2005; 2011) also show variations, yet, these variations are more subtle (context-dependent, e.g., with negative and scope islands).

b. Il (ne) peut/doit pas aller où?
he NE can/must not go where
'Where can't/musn't he go?' (*ibid.*, (9))

(10) Pascal n' a pas rencontré qui/quelle fille?
he NE has not met whom/which girl
'Who/which girl didn't he meet?'

(11) a. Plusieurs personnes ont reconnu qui? (*ibid.*, (15))
several persons have recognized who

b. Plusieurs chênes ont été coupés où/quand? (*ibid.*, (16))
several oaks have been cut where/when

(12) ?Tu passes toujours par quel chemin quand tu rentres?
you go always by which way when you go home
'Which way do you always take when you go back home?'

Baunaz (2005; 2011) argues that while (7)–(12) are acceptable for the majority of the consulted speakers, the status of these constructions depend on (i) the discursive contexts they appear in, (ii) the type of EP they carry and iii) the intonation they receive. i.e., it is probable that a native speaker will attribute a * to these sentences if no (appropriate) context is provided. Baunaz (2011) shows that lexical forms like *qui* 'who' are potentially ambiguous between (at least) three interpretations: specific, partitive and non-presuppositional (i.e., when the presupposition is cancelled) and that intonation helps disambiguating between them, as such EP carried by wh-phrases in-situ have prosodic correlates. Baunaz & Patin; Baunaz & Patin's (2011; 2012) study checked these claims, from the prosodic side, and has showed that prosody plays an important role in disambiguating wh-phrases.

2.2. Semantics and Prosody of wh-phrases in-situ

The semantics and prosody of French wh-phrases in-situ have caused a long debate in the literature. In the 90s and early 2000, linguists based their investigations mainly on intuitive grounds: for Cheng & Rooryck (2000) and Boeckx (2003), wh-phrases in-situ are presuppositional, with a rising contour; for Mathieu (2002), they are presuppositional, and exhibit a downfall intonation. Starke (2001) claims that presuppositional wh-phrases in-situ have a "slight accent" when they are extracted from WIs, intonation which must be distinguished from the downfall intonation. Baunaz (2011)

claims that there are three prosodic patterns available for French *wh* in-situ phrases: (a) rising, (b) downfall, and (c) slight fall-rise. These patterns correlate with three different interpretations: (a) non-presuppositional (*np*), (b) partitive and (c) specific. Recently, experimental studies, have confirmed or infirmed previous analyses of the phenomenon (Hamlaoui 2009; Déprez et al. 2012; 2013). Hamlaoui (2009) is concerned with the discourse conditions of these questions; Déprez et al. (2012; 2013) aim at testing the account of Cheng & Rooryck (2000), which basically claims that these questions are syntactically licensed by an abstract intonation morpheme in C. This intonation morpheme is realised by an obligatory sentence-final rising prosody, similar to the prosody of root polar questions in French. Their experimental study confirmed Cheng & Rooryck's (2000) proposal, yet they note that *wh* in-situ constructions do not always show the rising contour of polar questions. To account for this fact, they modulate their comments by placing information structure central to question formation. In this section, I show that the old intuitive semantic and prosodic descriptions of wh-phrases in-situ are all valid, yet need to be refined. Based on Baunaz (2011) and on the experimental study described in section 1.3, I show that there are three types of wh-phrases, which can be distinguished thanks to their semantics and their prosody. Contrarily to the studies mentioned above, this analysis is only based on the prosody of wh-words themselves, not on *wh* in-situ sentences as a whole. Importantly these wh-phrases can have the same morpho-phonological form (three different *qui*s).

There is a long-standing tradition among linguists that distinguishes between French wh-phrases in-situ and French wh-phrases ex-situ in terms of EP (Chang 1997; Boeckx 1999; Cheng & Rooryck 2000, among others). A presupposition is usually considered as being non-cancellable (in contrast to implicatures). The test of negation discriminates between these contexts. While wh-phrases ex-situ can appear in both presupposed and out-of-the-blue contexts, wh-phrases in-situ exclusively appear in contexts triggering EP. In presuppositional contexts, N-words are not possible answers to presuppositional wh-phrases, (13), (Boeckx 1999). Conversely it is possible to answer with a negative word to a *np* wh-phrase (14):

(13) a: Cédric a rencontré qui à l' uni?
C. has met whom at the university
'Whom did Cédric meet at the university?'
b: The phonology teacher/Jean-Marie /#**nobody**.

(14) a: Qui est-ce que Cédric a rencontré à l' uni?
who EST-CE-QUE C. has met at the university
'Who did Cédric meet at the university?'
b: The phonology teacher/Jean-Marie/**nobody**.

As Mathieu (2004); Baunaz (2005; 2011); Hamlaoui (2009); Déprez et al. (2012; 2013); Oiry (2011) note, though, N-words are perfect answers to wh-in-situ questions, i.e., (13b) is fine with *nobody* as an answer. Hence, wh-phrases in-situ occur in similar contexts as wh-phrases ex-situ. Following the reasonable claim that this test reveals the presence or absence of presupposition, both types of wh-phrases can be used in *out-of-the blue* contexts and in strong contexts where possible referents for the answer can be presupposed.[7]

Starke (2001) distinguishes between two types of wh-phrases in-situ which carry EP. Presupposed nouns phrases can be interpreted relative to two discursive contexts: **range** and **specificity**.[8] As in Baunaz (2011), I call range noun phrases **partitive** noun phrases. Both specific and partitive wh-phrases require contextually specified domains (as opposed to *out-of-the blue* contexts). As will become clear, partitivity and specificity will also be defined relative to the type of answer possible. These notions are defined below.

2.2.1. Partitivity

A partitive wh-phrase is an object, which belongs to a presupposed set containing more objects. Each of the objects of the set can potentially be referents to the answer of the wh-phrase, i.e., all are alternatives. In the list-context in (15), no presupposition of the existence of a particular antecedent is available in the discourse (such that Eva's colleague believes that this referent is the right one). Only the list is presupposed. As such, the answer can potentially be any of the pre-defined members of the list,

[7] Oiry (2011) ran an experiment showing that wh-phrases ex-situ and in-situ can both appear in non-root questions. If the two constructions are more frequent in *np* contexts, they are possible in presuppositional contexts two. Her results give more weight to Baunaz; Baunaz's (2005; 2011) description of the phenomenon, in that it shows experimentally that there are no semantic distinctions in the use of wh-phrases in-situ and ex-situ, a fact independently noted in Baunaz & Patin (2011; 2012), see also Figure 10.

[8] Starke (2001) does not define these notions. The following develops Baunaz (2011) for the semantics of wh-phrases, and extends Baunaz & Patin (2011; 2012) for their prosody.

e.g., *turkey*, *salmon* or *vegetarian*. Answering *rien* 'nothing' in (15) would go against the fact that there is a potential antecedent to the answer corresponding to *quoi* in the list (assuming that the colleague will be present at the party, which she should be).[9] In the experiment, informants were asked to utter Eva's sentence in (15). Figures 1 and 2 are the F0 curves of two different speakers: as can be seen, no particular H or L tone is noticeable, but the phrasal H−.

(15) Eva organizes a Christmas party in the department. She suggests three menus: vegetarian, turkey, and salmon. She asks one of her colleagues.
Eva: et toi, tu préfères quoi dans la liste?
and you, you prefer what in the list?
'And you, what do you prefer in the list?'
Coll.: Turkey/Salmon/Vegetarian/#Nothing.

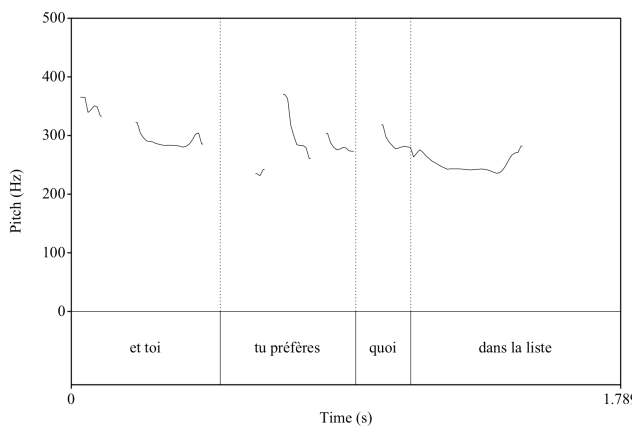


Figure 1: F0 curve of (15), no special accent on partitive *quoi* in-situ

Partitive wh-phrases in-situ involving overt noun restrictions (typically *quel N* 'which N') are prosodically similar to bare interrogative wh-pronouns: the Q part, *quel*, does not involve a prominent accent, (Figure 3–4). This is exemplified in (16). The context is the same as in (15).

[9] One of the reviewers notes that if the list of individuals assumed in a partitive wh-phrase in-situ is not a presupposition, but an implicature, it should be cancellable. Then it would be expected that one could cancel the implication by answering the partitive question with an N-word, or by choosing an individual that is not in the list. (15) shows that since such an answer is unacceptable, the sentence must have some kind of presupposition.

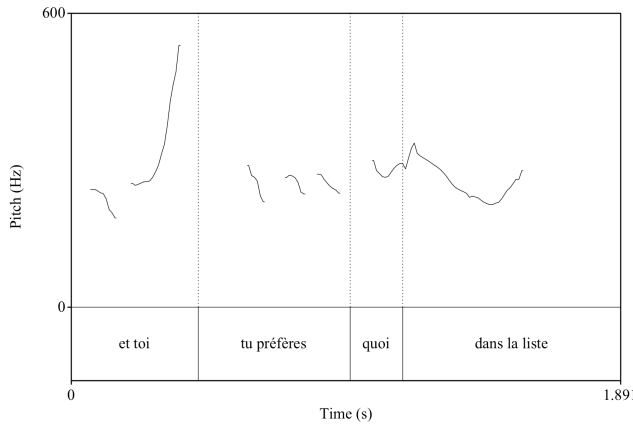


Figure 2: F0 curve of (15), no special accent on partitive *quoi* in-situ

(16) Eva: et toi, tu préfères quel menu dans la liste?
and you, you prefer which dish in the list?
'Which dish do you prefer from the list?'
Coll.: Turkey/Salmon/Vegetarian/#Nothing.

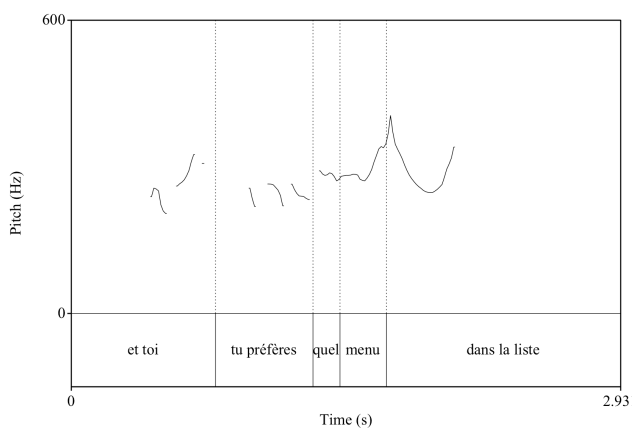


Figure 3: F0 curve of (16), no accent on *quel* in-situ, accent on the noun restriction

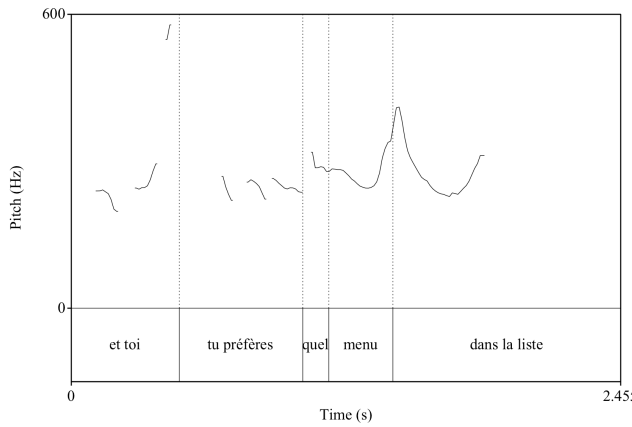


Figure 4: F0 curve of (16), no accent on *quel* in-situ, accent on the noun restriction

2.2.2. Specificity

The presupposition involved with specific wh-phrases in-situ is different for that involved with partitive wh-phrases: specificity narrows down the context to familiar individuals, excluding alternatives. A constituent question involving specificity entails an answer referring to a familiar individual that the interlocutor has in mind.[10] A constituent question involving specificity asks for the identity of that entity, as in (17) (adapted from Adli 2006):

(17) During a trial, witnesses and defendants are confronted. One of the defendants has been accused by all the witnesses. The journalist asks:

a. et les témoins ont reconnu **qui** dans le box des accusés?
and the witnesses have recognized whom in the box of.the defendants
'and whom did the witnesses recognize in the defendants' box?'

b. et les témoins ont reconnu **quel accusé** dans le box?
and the witnesses have recognized which defendant in the box
'and which defendant did the witnesses recognize in the box?'

[10] In Heim (1982), (i) definite NPs must be **familiar** in the context, and (ii) its restriction on must be presupposed. The notion of familiarity on NPs is characterized as displaying a co-indexed discourse referent in the Common Ground ((CG), formally, a function from discourse contexts to sets of indices. Each set is the discourse referents constituting the CG of the relevant context). Definites presuppose that such discourse referents are in the CG, i.e., they refer back. Indefinites introduce new referents thanks to restricted free variables in the universe of discourse. Enç (1991) extends Heim's view on definites to indefinites. She claims that specificity is related to familiarity.

In (17), the journalist asks for the identification of the individual that all the witnesses recognized. The (only) felicitous answer must be the specific antecedent that all the witnesses recognized, i.e., the answer is non-disjunctive. The speaker infers that the interlocutor has this individual in mind, such that the presupposition entailed by the information-question is satisfied. As such, a negative statement/phrase could not answer the journalist's question, since it would go against the EP that there is a specific antecedent for the wh-phrase.

The experiment shows that specific wh-pronouns get special accents and that a special prosody falls on specific wh-pronouns. The F0 curves of (17a) have shown that, in addition to the phrasal H−, *qui* receives a H* tone, resulting in a sharp raising of the F0 (see Figure 5). When a complex wh-phrase in-situ is used (as in (17b)), the sentence has the prosody elicited in Figure 6: its F0 is clearly rising on the wh-word *quel*, which gets an accent (vs. the noun restriction). Such a configuration demonstrates that the sharp rising of the F0 in Figure 5 does not only results from the presence of a boundary tone. There is no prominence on the noun restriction *accusé*:

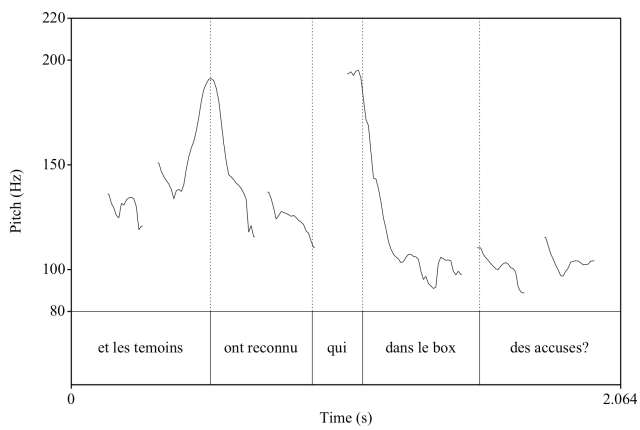


Figure 5: F0 curve of (17a), special accent on the bare specific *qui* in-situ

To sum up, partitive wh-words in-situ like *quoi* and *quel* are uttered with no special accent, (Figures 1–4). In contrast, specific wh-words in-situ (*quel,*

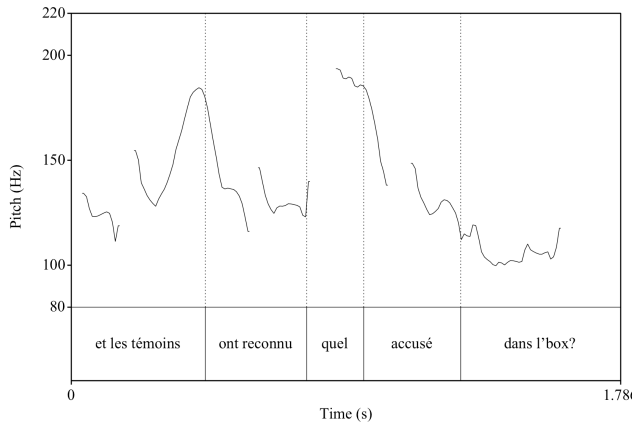


Figure 6: F0 curve of (17b), special accent on the bare specific *qui* in-situ

qui) are prosodically prominent (Figures 5–6).[11] Note in passing that bare specific wh-phrases ex-situ as in (17c) get a similar accent:

(17) c. **Qui** les témoins ont reconnu dans le box des accusés?
who the witnesses have recognized whom in the box of.the defendants
'and whom did the witnesses recognize in the defendants' box?'

Also note that the prosodic contrast found between complex partitive and specific wh-phrases in-situ also holds of wh-phrases ex-situ (Figure 8).

The distinction between the two types of prosody is relevant: Baunaz & Patin (2011; 2012) obtain ∼54% of specificity-based sentences (positive polarity) are associated with an accent vs. less than 10% of partitivity-based sentences (Figure 9, from Baunaz & Patin 2011, 100, their Table 1).

[11] An anonymous reviewer asks whether this special prosody for specific wh-phrases in-situ could be in some way related to focus, and if so, whether this focus would also be responsible for the specific reading. While I consider that such a question would require a special investigation and further research, we can already say that such a relation is far from being obvious. On the one hand, it has been demonstrated elsewhere that "focus is not marked [in French] by a specific tone or accent associated with the focalized constituent, but by a boundary tone that varies with the illocutionary force associated with the utterance" (Beyssade et al. 2004, 477). On the other hand, the use of accentuation to convey focus is not the main strategy used in French (compared to clefting, for instance) (Post 2000, 9, fn. 9). On the information structure side of wh in-situ constructions, see also Hamlaoui (2009).

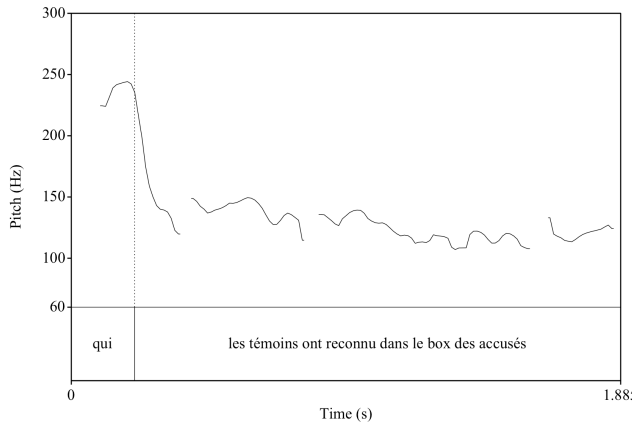


Figure 7: F0 curve of (17c), special accent on the bare specific *qui* ex-situ

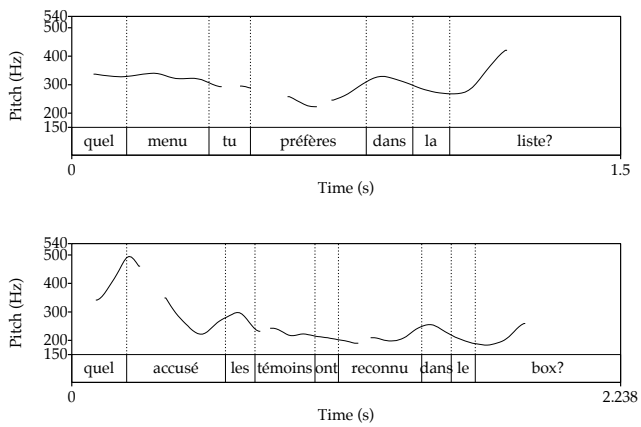


Figure 8: F0 curve of the ex-situ versions of (16) and (17b); special accent on specific *quell* vs. no accent on partitive *quel*

Note moreover that we observe no frequency difference as to the insertion of an accent between wh-phrases in-situ and wh-phrases ex-situ, for any of the contexts considered (Figure 10 from *ibid.*, 102, their Table 4).

As noted by Baunaz & Patin (2011), there is a difference between in-situ and ex-situ wh-words with *qui/quoi* (Figure 11, from *ibid.*, 103,

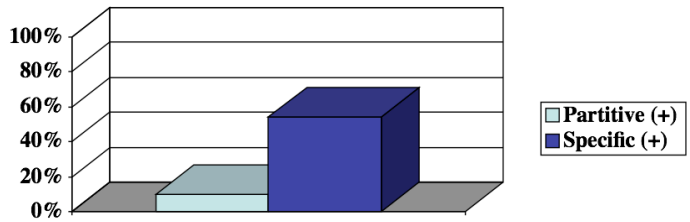


Figure 9: Main results: specific vs. partitive

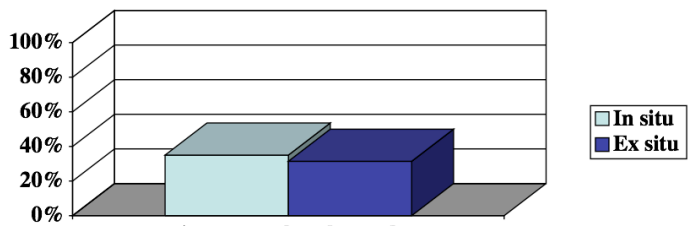


Figure 10: Main results: in-situ vs. ex-situ

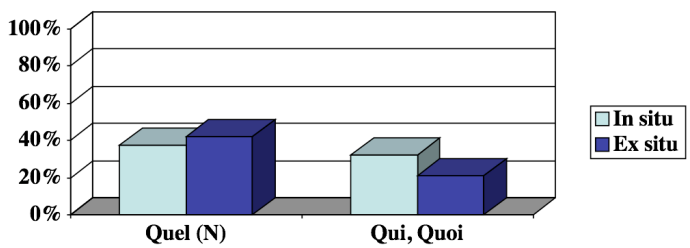


Figure 11: Accent insertion on wh-words: bare vs. complex wh-phrases

their Table 6). This is because fronted *quoi* becomes *que* (*est-ce que*), with *que* a clitic (see Rooryck 2000, among others), i.e., it is unaccented by definition.

2.2.3. Non-presupposition

Recall that based on the test of negation, I follow Mathieu (2004); Baunaz (2005; 2011); Hamlaoui (2009); Déprez et al. (2012; 2013) and Oiry (2011) in claiming that wh-phrases in-situ can be used in *out of the blue* contexts, i.e., contexts where the interlocutor has no clue about a referent for the wh-phrase. This type of wh-phrase does not involve commitment

of existence: the presupposition underlying the wh-phrase has been cancelled. As such there is no individual or set of alternatives satisfying it. In that case, *rien* is a possible answer. *Out of the blue* wh-words are defined by the absence EP.

In (18), the speaker does not know whether the speaker is going out with friends or not (i.e., he might well be staying home the whole week-end, studying, for instance), note that he might have. When no commitment of existence is involved with wh-phrases, nothing special falls on it, be it in-situ (Figure 12) or ex-situ (Figure 13).[12]

(18) Fred and Hélène are good friends, and they chat on the phone about the last gossips around. After a while, Fred changes topics and asks:

a. Ah, au fait, tu vois qui vendredi soir?
ah by the way you see whom Friday night

b. Ah, au fait, qui tu vois vendredi soir?
ah by the way who you see Friday night?
'By the way who will you hang out with on Friday night?'

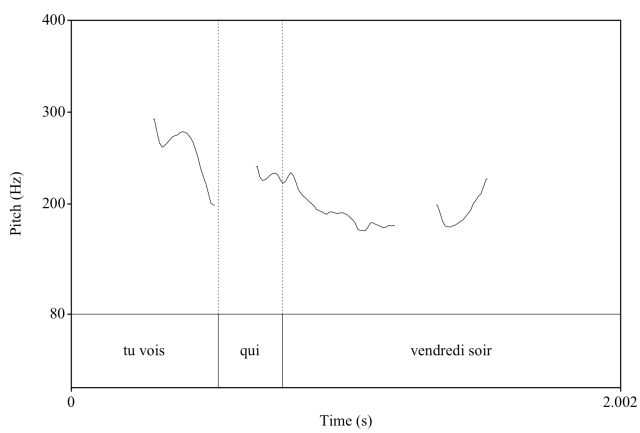


Figure 12: F0 curve of (18a), no special accent on non-presuppositional *qui* in-situ

To sum up, specificity means that there is a familiar individual that the interlocutor is inferred by the speaker to have in mind, such that the

[12] Complex wh-words are intrinsically interpreted as presupposed (see Pesetsky 1987, among others). For this reason, I do not provide figures of complex wh-phrases in-situ in this context.

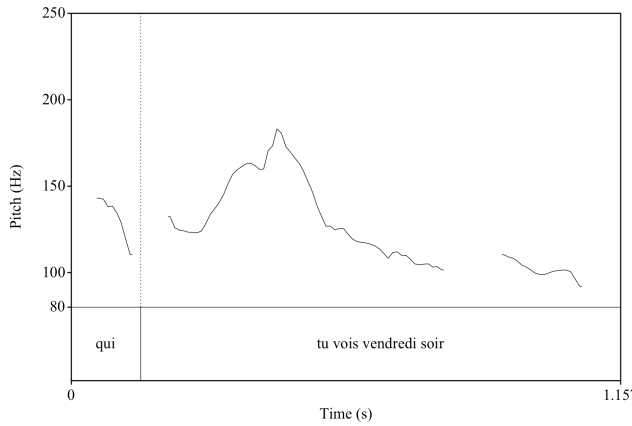


Figure 13: F0 curve of (18b), no special accent on non-presuppositional *qui* ex-situ

presupposition entailed by the information-question is satisfied by it. It involves a closed domain. The domain of partitive wh-phrases involves a closed set of alternatives that are presupposed. Crucially, it involves no familiar individuals. Specificity and partitivity are then semantically distinct. In *out of the blue* contexts, on the other hand, the presupposition is denied, i.e., there is neither an individual, nor a set of alternatives, satisfying it. The domain of *np* wh-words is open on a finite set of alternatives. The accent related to specificity is realized as a high tone, speaker-dependent, enhanced by other factors (such as increased intensity for instance). No prosodic contrast has been identified between partitive and *np* items. I conclude that the prosody of wh-phrases is crucially sensitive to specificity. The latter claim is an argument in favor of a prosodic distinction between partitivity and specificity.

2.3. Syncretism and wh-phrases

I note that in (17) and (18), the same morpho-phonological item is used to express both specificity and *np*: *qui* /ki/ ‘who’. The same item can also appear in partitive contexts, (19):

(19) After the parade, all the girls are standing in front of the jury. Joe, one of the judges, asks Bob:

Joe: et toi, tu préfères **qui**, là?
and you, you prefer who, there
'And you, who do you prefer?'

Bob: The blonde one/the brunette one/the red-haired one/#no one.

In nanosyntax similar morpho-phonological items are not (necessarily) considered as being instances of homophony, but of syncretism, that is, one lexical entry, with one phonological form, can spell-out distinct syntactic-trees (see section 1.1). Rather than homophony I propose that phonologically identical *qui*s in (17)–(19) are syncretic items (idem for the occurrences of *quel* in partitive and specific contexts). As seen by the shaded areas in (20), syncretism is restricted to contiguous regions. Recent work has shown that this adjacency reflects structural adjacency, i.e., syncretisms tell us about the linear order the underlying fseq (Caha 2009). In other words the wh-phrases in (20) lexicalize different structures of the same fseq, i.e., they come in various sizes. (21) schematically replicates the linear order observed in (20).

(20)

Specific-Q	**Partitive-Q**	**np-Q**
qui	qui	qui
quel	quel	N/A

(21) a. qui_3 | qui_2 | qui_1

b. $quel_2$ | $quel_1$

In section 4 I will show that thanks to the composition of semantics tool, one can deduce how the fseq of wh-phrases is hierarchically organized.

3. Existential presupposition (EP) and Universal Quantifiers

Universal Quantifiers (*tous les N* 'all the N', *chacun des N*), which are presuppositional (they are interpreted with non-empty restrictions and quantify over contextually given set, see also Enç 1991; Giannakidou 2006), also mark the distinction **partitive** vs. **specific**. Yet, unlike wh-phrases, the distinction is morphologically, not prosodically, marked: the Universal Qs

belonging to one or the other class are different lexical items: ***tous*** *(les N)* 'all (the N)' vs. ***chacun*** *(des N)* 'each (of the N)'.[13]

3.1. Specificity and partitivity

The contextual differences in (22)–(23) are subtle. One difference is related to familiarity: Panda's mom does not know the list, hence although the set of guests is non-empty (i.e., it is existentially presupposed), the members of the list are not familiar to her, and as such, specificity is involved. Yet, Mom extracts a set from the guest list, i.e., *all the girls* (vs. the boys). In that context, the all complex Quantifier has a partitive reading. The fact that *chacun des N* is not felicitous in this context suggests that it cannot get a partitive reading.

(22) Panda drew up the list of guests for her pajamas party. Her mum does not know who's written on the list she just received, she only noticed that there were boys and girls names. She says:

a. Ah non, pas de garçons! Par contre, toutes les filles sont invitées!
oh no not of boys but all the girls are invited
'Oh no, no boys! But all the girls are invited!'

b. #Ah non, pas de garçons! Par contre chacune des filles est invitée!
oh no no of boys but each of.the girls is invited

The context in (23) has been modified so that it narrows down to familiar individuals: it is a specific context. Panda – to whom all the members of that list are familiar, expresses a wish about the members of that presupposed set. In that context *chacune des filles* is felicitous, and I claim that it is because it has a specific reading (I will come back to (23) in section 4).[14]

(23) Panda drew up the list of guests for her pajama party. Handing it to her mum, she says: J' aimerais que chacune des filles soit présente!
I would like that each of.the girls be.SUBJ present
'I'd like each of the girls be there!'

That the presupposition status of *chacun des N* and *tous les N* are different can be shown with the help of *il y a* constructions in French. Although

[13] This section extends Baunaz (2011). See Puskás (2002) for arguments against the distinction collectivity vs. distributivity as an intrinsic syntactic difference between *tous les N* and *chacun des N*.

[14] That *de* 'of' in *chacun des N* is not a partitive marker has been extensively discussed in Baunaz (2011). The reader is referred to that work for details.

French is no exception to the definiteness effect (Milsark 1974), (24), *il y a* constructions are not necessarily existential (see Dobrovie-Sorin & Beyssade 2004): they can also involve definite DPs, in enumerating contexts, (25):

(24) a. *Il y a le garçon/tous les garçons dans la salle.
there *y* has the boy/all the boys in the room

b. *Il y a toi dans la salle.
there *y* has you in the room

(25) a. What is there in the fridge for dinner?

b. Ben, dans le frigo il y a les restes d' hier soir.
well in the fridge, there *y* has the leftovers from yesterday night
'Well, in the fridge, there are last night's leftovers.'

Baunaz (2011) claims that in list contexts such that in (25b), there is a presupposed list from which one member (or more) is extracted, providing a partitive context. The presupposed list contains all the potentially extractable foods from the fridge (eggs, salad, leftovers, etc.), the partitive object is the leftover extracted. *Tous les N* can appear in list-contexts: in (26a), it can be added to the listed members of the set, and then extracted from it, (26a,b), but not *chacun des N*, (26c,d) (note that *il reste*-constructions sound even better):

(26) What is there/is left in the fridge for dinner?

a. Ben, dans le frigo il {y a/reste} les restes
well in the fridge there *y* has/is the leftovers
d' hier soir, toutes les tomates, des œufs.
from yesterday night, all the tomatoes, of.the eggs.
'Well, there are last night's leftovers, all the tomatoes, some eggs in the fridge.'

b. Ben, dans le frigo, il {y a/reste} toutes les tomates.
well in the fridge there *y* has/is all the tomatoes
'Well, there are all the tomatoes in the fridge.'

c. Ben, dans le frigo, il {y a/reste} les restes
well in the fridge there *y* has/is the leftovers
d' hier soir, chacune des tomates, des œufs.
from last night, each of.the tomatoes, of.the eggs
'Well, there are last night's leftovers, every tomato, some eggs in the fridge.'

d. *Ben, dans le frigo, il {y a/reste} chacune des tomates.
well in the fridge there *y* has/is} each of.the tomatoes

3.2. Prosody

As opposed to wh-phrases, the prosody of Universal Quantifiers, including Universal Qs (i.e., *chacun, tous*), is not necessary to distinguish between partitivity and specificity. Seven different sentences containing complex Universal Quantifiers in context have been recorded in the experiment described above (two sentences with *tous les N*, and their counterparts with *chacun des N*, both in subject position, plus two with *chacun des N* in both subject and object positions. Finally, one sentence with *tous les N* in subject position was also recorded). No particular prosody falling on neither the complex Universal Quantifiers, nor on the bare Universal Qs) was found. In the (specific) context in (27), *chacun des N*s and *tous les Ns* have a similar prosody (and so do the Universal Qs *chacun* and *tous*): their F0 is not accented (Figures 14–15).

(27) During the end of year party, various prizes were awarded to the best students: maths, English, French, physics (etc.). This year, most of the students got a prize. After the party, the dean told his wife:

a. Tous les étudiants ont reçu un prix différent.
all the students have received a prize different
'All the students received a different prize.'

b. Chacun des étudiants a reçu un prix différent.
each of.the students has received a prize different
'Each of the students received a different prize.'

Hence, as opposed to wh-phrases, specificity and partitivity are lexically encoded with Universal Qs and not prosodically marked. (28). Also these items are not syncretic, (28).

(28)

Specific-Q	**Partitive-Q**	**np-Q**
qui	qui	qui
quel	quel	N/A
chacun	tous	N/A

In the following, I show that specificity and partitivity are reflected syntactically.

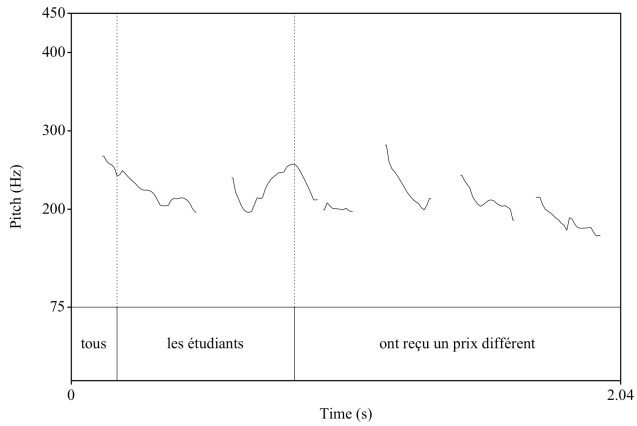


Figure 14: F0 curve of (27a); no special accent on *tous*

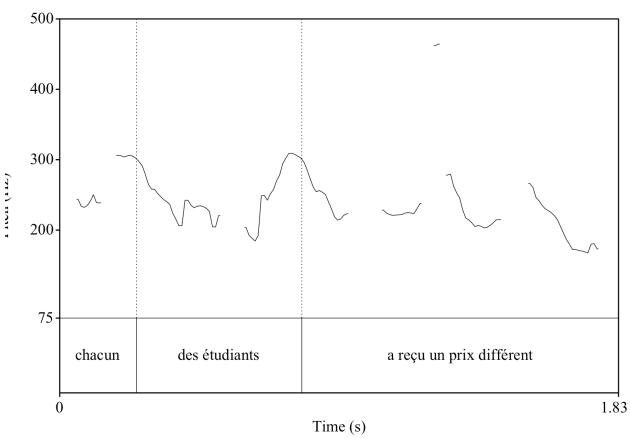


Figure 15: F0 curve of (27b); no special accent on *chacun*

4. Specificity contains partitivity

Nanosyntacticians believe that semantic considerations can and should play a role in building up functional sequences (fseq) and in determining structural size differences. If we can show that one of these concepts is contained within the other, then we can show that they are in hierarchical relationship. The idea behind is that the more semantics, the bigger.

In section 3, I have claimed that specificity involves a familiar individual that the interlocutor has in mind, while partitivity involves an object, which belongs to a presupposed set containing more objects. Somehow, specificity requires a narrower context than partitivity, i.e., it narrows down the context to familiar individuals. In (22), I have shown that *chacun des N* cannot appear in partitive context. In (29), the context narrows down to familiar individuals: it's a specific context. Panda – who knows all the member of the set, i.e., the members of the list are familiar to her, expresses a desire. This context is specific, and *chacun des N* is fine. Interestingly, *tous les N*, the complex partitive Universal Quantifier, is fine too in that context. In (29b), *toutes les filles* gets a specific reading.

(29) Panda drew up the list of guests for her pajama party. Handing it to her mum, she says:

a. J' aimerais que chacune des filles soit présente!
I would like that each of.the girls be.SUBJ present
'I'd like each of the girls be there!'

b. J' aimerais que toutes les filles soient présentes!
I would like that all the girls be.SUBJ present
'I'd like all the girls be there!'

That partitive phrases can be specific, but not vice-versa, can also be shown via clitics substitution in French (from Baunaz 2015): in a partitive context like (30), the genitive clitic (*en*), can substitute for a partitive DP, (30a). In a specific context like the one in (31), a specific accusative clitic (*l'*) is used, (31a). Crucially partitive phrases like *one of the books* in (30) can also be interpreted as specific, if the context is sufficiently narrowed down, (30b). In that case, *un* receive some accent, signaled here by the diacritic "/". The reverse is not true: the continuation 'but I don't know which one' in (31b) – forcing a partitive reading within a specific context, is infelicitous. (31c) is infelicitous in a specific context.

(30) Pierre read one of the books, from those on the list (of books). (partitive)

a. Pierre **en** a lu un, mais je ne sais pas lequel. (partitive)
P. cl.GEN has read one, but I NE know not which
'Peter read one, but I don't know which one.'

b. Pierre **en** a lu / un, c'est *L'homme du Lac* d' Indriðason. (specific)
P. cl.GEN has read one, it is *The Draining Lake* by I.
'Peter read one, it's *The Draining Lake* by Indriðason.'

(31) Pierre read [a book], from those on the list (of books), it's *The Draining Lake*(specific)

a. Pierre **l'** a lu. (specific)
P. cl.ACC has read
'Peter read it.'

b. Pierre **l'** a lu, #mais je ne sais pas lequel. (partitive)
P. cl.ACC had read, but I NE know not which
'Peter read it, but I don't know which one.'

c. #Pierre **en** a lu un, mais je ne sais pas lequel. (partitive)
P. cl.GEN has read one, but I NE know not which
'Peter read one, but I don't know which one.'

Partitive phrases can thus appear to be specific, but specific phrases never appear to be partitive. In other words, specificity semantically contains partitivity, but not vice-versa. In the next section I will show that specificity and partitivity have syntactic reflexes. This will lead me to claim that specificity dominates partitivity in the Q-fseq (section 6).

5. Specificity, partitivity and islands

In this section I show that specificity and partitivity are syntactically active and that they play different role in the syntax of A′-dependency.

5.1. Negative islands

The prosody of wh-phrases in-situ in WIs has also been recorded, yet only in specific and partitive contexts. Although some speakers were reluctant to utter these sentences, they tend to put a (slight) accent on the bare specific wh-pronoun in-situ – just like they did with specific wh-pronouns, Figure 16). The accent on the wh-word is more prominent (and frequent) on specific complex wh-phase (Figure 17). These sentences were pronounced in the specific context presented in (32):

(32) Marie prepared a homemade vegetable soup, just like Jean taught her to do. Because she dislikes potatoes, she avoided to put some. A bit disappointed, she comments: Marie: My soup wasn't that bad, yet, it wasn't as good as yours! Much too runny!

a. Jean: Ah ouais, et t' as pas mis quoi dedans?
oh yeah and you have not put what in (the soup)
'*Oh yeah, and what did you not put in the soup?'

b. Jean: ah ouais, et t' as pas mis quel légume dedans?
oh yeah and you have not put which vegetable in (the soup)
'What/Which vegetable did you not put in the soup?'

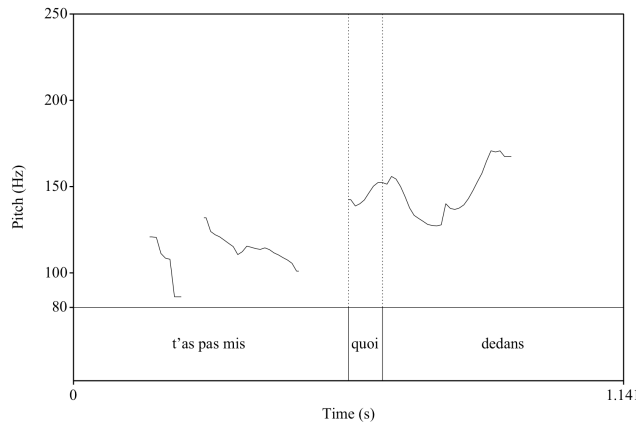


Figure 16: F0 curve of (32a); slight accent on the specific *quoi* in-situ. The rise on *quoi* may come from a boundary tone, though. If so, the specific wh-phrase is not accented, and resembles Figure 19 (C. Patin, p.c).

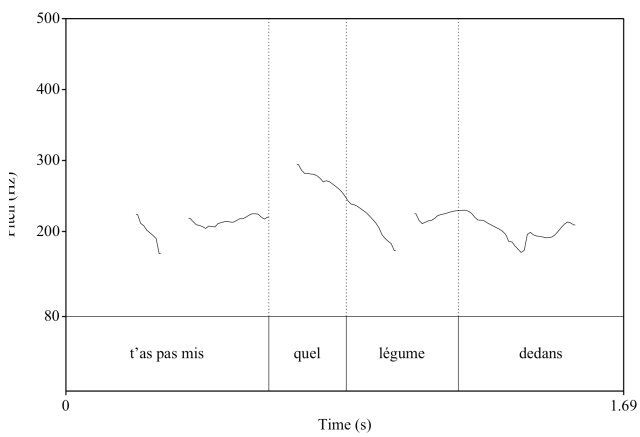


Figure 17: F0 curve of (32b); special accent on the specific *quel* in-situ

The prosody of partitive wh-phrases extracted out of neg-islands is less conclusive than when they are not embedded under islands. First, bare pronouns tend to be accented as in echo questions (Figure 18). Second, instances of partitive wh-phrases in-situ with and without special accent

were also found (Figures 19–20). Conversely, complex wh-phrases are most of the time uttered with no accent on the wh-item itself (Figure 21), and sometimes with what seems to be an accent on the noun restriction (Figure 22).

(33) After a year in New York, Alain is back in Paris, and is happy to meet his high school friends. At the moment, he only met some but not all of his friends. Bernard, his best friends, is trying to organize the next meetings. He calls Alain's mum:

a. B.: Il n' a pas rencontré qui à Paris?
he NE has not met whom in Paris

b. B.: Il n' a pas rencontré quel copain à Paris?
he NE has not met which friend in Paris
'Whom/which friend did he not meet in Paris?'

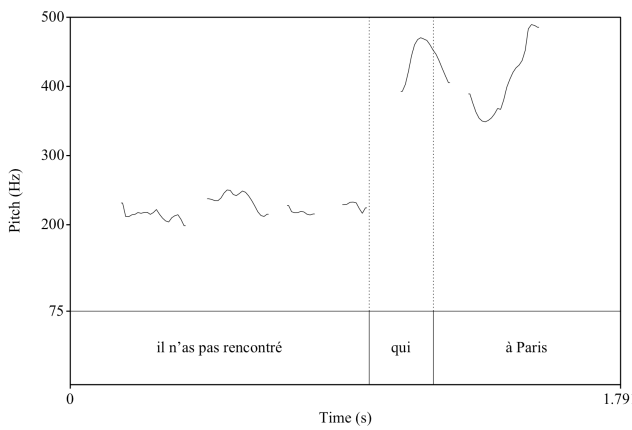


Figure 18: F0 curve of (33a), echo intonation on the bare partitive *qui* in-situ

More sentences should be tested in order to give a more global picture of the phenomenon, i.e., this is only a tendency. Moreover, there was a great diversity of behaviors among speakers. Yet, the general picture is that specific wh-phrases are almost exclusively accented even in neg(ative)-islands, whereas the prosody of partitive wh-phrases is more chaotic.

The negative marker being a bare operator, it belongs to the class of Q-features in (1). It does not involve EP, so partitivity and specificity are not at stake. Although not being the preferred option, specific wh-phrases in situ can be extracted out of neg-islands. Starke (2001) notes that only specific argument can be extracted, (34):

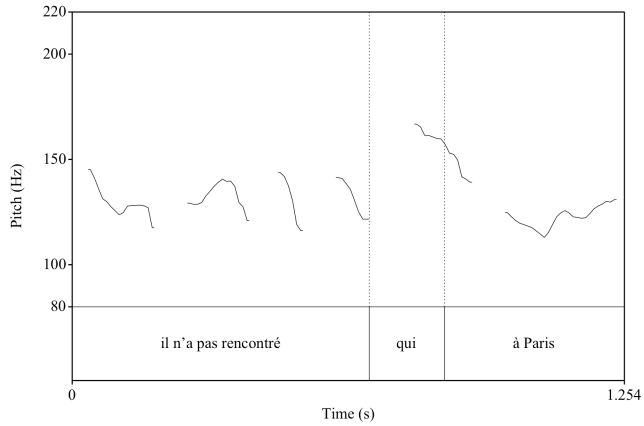


Figure 19: F0 curve of (33a), special accent on the bare partitive *qui* in-situ

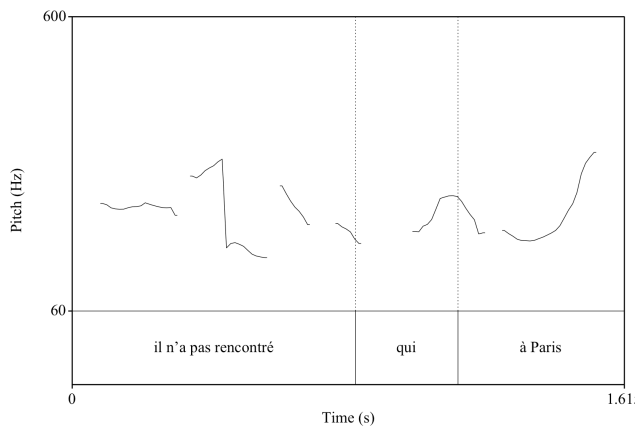


Figure 20: F0 curve of (33a), no special accent on the bare partitive qui in-situ

(34) a. Tu crois qu' elle a pas fait quoi? (Starke 2001, 23, (52a))
you think that she has not done what
'What do you think that she did not do?'

b. ??T'es pas parti comment? (*ibid.*, (54b))
you are not left how

Similarly, a partitive wh-phrase in-situ can also appear in neg-islands, iff it is an argument, (35). (35) can be uttered in the following gym context, adapted from Baunaz (2011, 222, (58)).

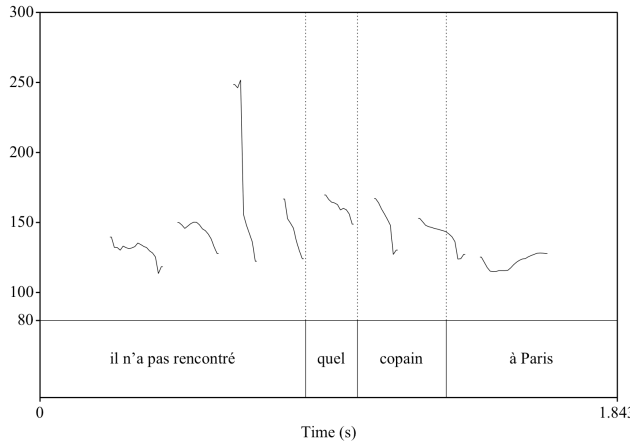


Figure 21: F0 curve of (33b), no special accent on the partitive *quel,* nor the noun restriction

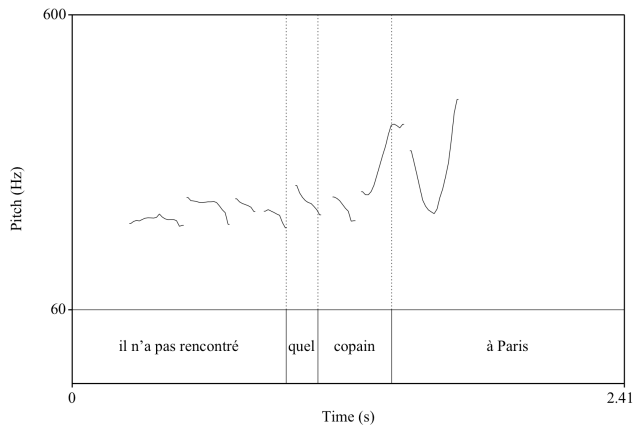


Figure 22: F0 curve of (33b), no special accent on the partitive *quel*; accent on the noun restriction

(35) Claire is a regular at Rainbow gym. She goes there 3 times a week. As it is usually the case in these infrastructures, she has a coach. Her coach usually prepares a plan for the day, i.e., she needs to use all the machines listed. That day Claire is a bit tired and she practices slower than usual. At the end of the session, she goes to the coach and tells him that she could not use all the machines. The coach, who wanted to prepare the next session is a bit angry. He asks:

Coach: Bon, t' as pas utilisé quelle machine?
well you have not used which machine
'Well, which machine didn't you use?'

If one tries to construct list-contexts, like the one in (36), adjunct extraction is ungrammatical. Note though, that clefting is a preferred option in this context:

(36) Tom is the family globe trotter. He travelled all around the world for more than 20 years. During a family supper, his curious niece presents him a map of the world, with a list of names of all the countries of the world. She asks him:

a. ??Tonton Tom, t' es pas allé où?
oncle T. you are not gone where
'Oncle Tom, where didn't you go?'

b. Tonton Tom, c'est où que t' es pas allé?
oncle T. it is where that you are not gone
'Oncle Tom, where is it that you didn't go?'

Finally, *out of the blue*, wh-phrases cannot appear in-situ in neg-islands, (37):

(37) a. *Tu pense qu' elle a pas fait quoi?
you think that she has not done what

b. *Tu pense qu' elle a pas mangé sa pomme comment?
you think that she has not eaten her apple how

Therefore we arrive at the conclusion that only *np* wh-phrases are blocked in neg islands, i.e., *np* wh-phrases cannot jump over bare Qs, but partitive and specific wh-phrases can. Since bare Qs are constituted of a Q feature only, this means that they block a phrase sharing the same feature(s), i.e., *np* wh-phrases are potentially only composed of a Q feature. Partitive and specific wh-phrases in-situ on the other hand, have something more than *np* wh-phrases. They can jump over bare Qs. This suggests that partitive and specific Qs involve "something more" that is relevant to RM when added to Q (in line with Starke 2001). Thanks to Scope Islands, we will see in section 5.2 that this "something more" might be different when specificity or partitivity is involved.

5.2. Scope islands

Complex Universal Quantifiers (*tous les N, chacun des N*) combine a quantifier (= Q, *tous, chacun*) and an overt noun restriction (*les N, des N*).[15] Both QPs involve the class of Q-features and EP (see section 3), i.e., both partitivity and specificity are involved.

We have seen in section 4.1 that extractions out of neg-islands are banned with *np* Qs. In section 4.1 I have claimed that the negative operator is constituted of a Q-feature only, and as such it only blocks movement of *np*-Q items. Because Universal Quantifiers belong to the class of Qs, they are intrinsically [Q], while displaying different types of EP. As such, they should block extractions of *np* wh-phrases. In (38a) *quoi* cannot cross specific *chacun des N*, as it cannot cross partitive *tous les N* in (38b):[16]

(38) a. *Chacun des garçons a mangé quoi?
each of.the boys has eaten what

b. *Tous les garçons ont mangé quoi?
all the boys have eaten what

If a partitive context is set, we note that partitive wh-phrases are blocked by complex specific and complex partitive Quantifiers, (39):[17]

(39) During the end-of-year party, various prizes were awarded to the best students: maths, English, French, physics, etc. This year, all the students got a prize. After the party, the dean's wife asks her husband:

a. *Chacun des étudiants a reçu quoi (comme prix)/ quel prix?
each of.the students has received what (as prize)/ which prize

b. *Tous les étudiants ont reçu quoi (comme prix)/ quel prix?
all the students have received what (as prize)/ which prize

(40) involves specific wh-phrases in-situ. It shows that no matter which Universal Quantifier intervenes it has to take wide scope. (40), coupled with (39), teaches us something important: when interveners, complex partitive

[15] See Baunaz & Lander (submitted b) for the decomposition of Universal Qs in a nanosyntactic perspective.

[16] Some speakers (only linguists) marginally accept (38a). For these speakers, the only reading is a PL reading (PL, *John ate salmon and Bill ate nothing*). This suggests that (i) the Q feature and the wh-feature are discrete features; (ii) that the Q-feature itself cannot move out of scope islands.

[17] Again, note that the PL reading mentioned in footnote 16 is marginally possible with the partitive wh-phrase in (38a) only.

and specific Universal Quantifiers do not behave alike: if specific *chacun des N* blocks movement of the specific wh-phrase, (40a), partitive *tous les N* does not (40b). Yet, both partitive and specific Universal Quantifiers block movement of a partitive wh-phrase.

(40) During a trial, witnesses and defendants are confronted. One of the defendants has been accused unanimously. The journalist asks:

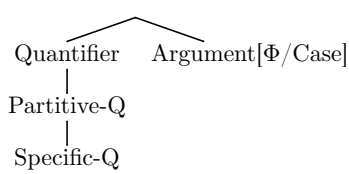
a. *Et chacun des témoins a reconnu qui/ quel accusé?
and each of.the witnesses has recognized whom/ which accused

b. Et tous les témoins ont reconnu qui/ quel accusé? *(∀ > wh); (wh > ∀)
and all the witnesses have recognized whom/ which accused
'And whom/which accused did all the witnesses recognized?'

(40), coupled with (39), suggests that RM as described in (3)–(5) should be refined, so as to include the notion of partitivity.

Thanks to intervention facts, I have argued that specificity and partitivity are syntactically active: only *np* wh-phrases are blocked by everything that is a Q (Q, partitive-Q and specific-Q), that partitive wh-phrases are blocked by everything that is more than a Q (partitive-Q and specific-Q) and that specific wh-phrases are blocked by specific-Qs only. Similarly, Qs block only Qs that are neither partitive, nor specific; partitive-Qs block everything that is not specific (Q and partitive Q) and specific-Qs block everything, i.e., they are absolute blockers.[18] We can now modify Starke's tree in (5) as in (41):

(41)



Negative and scope islands facts suggest a hierarchy among these features. The next section gives the syntactic trees of (complex) quantifiers.

[18] Baunaz (2011) formally proposes that the locality principle in (i) is at stake, which says that Q that has something less than the intervener is blocked. The reader is referred to this work for further details:

(i) given Q < Q partitive < Q specific, *Q_i ... Q_n ... Q_i iff $Q_n \geq Q_i$
(Baunaz 2011, 219, (48))

The locality principle in (i) is totally in line with the analysis given in this paper. Thanks to Genoveva Puskás for discussions on that matter.

6. The structures of quantifiers

This section deals with the syntactic-trees of Qs. The nanosyntactic approach allows us to account for apparent lexical ambiguities, namely the fact that interrogative forms like *qui* are potentially ambiguous between three interpretations. Indeed we have proposed in section 2 that the three different variants of *qui* (or the two variants of *quel*)[19] are syncretic, i.e., they have different feature make-ups, that can be lexicalized by different syntactic-trees, of different sizes. In section 4 I have shown – thanks to the tool of compositionality of semantics, that specificity contains partitivity (but not vice-versa) and in section 5.2–5.3 that these concepts are syntactically active. I propose that when a specific-Q is involved a partitive feature is also involved, i.e., the specific feature dominates the partitive feature. Universal Qs also involve the specificity and the partitive features, yet, they are not syncretic. I claim that together with Q, the specific and the partitive feature are relevant to RM. Section 6.1 investigates wh-pronouns, and 6.2 Universal Quantifiers/Qs.

6.1. Wh-phrases

Baunaz (2011; 2015) argues that wh-phrases are not intrinsically interrogative. The existence of the non-quantificational np *qui* (among others) supports this claim ((42a,b) are from Lipták 2001, 137, (13a,b)):

(42) a. Les professeurs rentraient chez eux, **qui** à Paris, **qui** à Bruxelles.
the professors returned home who to Paris who to Brussels
'The professors returned home, some of them to Paris, others to Brussels.'

b. **Qui** apportait un fromage, **qui** un sac de noix, **qui** un quartier de chèvre...
who brought a cheese who a bag of nuts who a piece of goat
'One brought a piece of cheese, one a bag of nuts, one a piece of goat meat...'

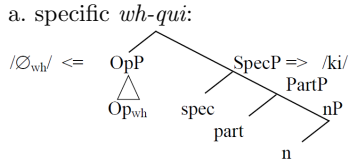
[19] I am abstracting away from a level of decomposition which involves agreement morphemes: it is indeed obvious that these morphemes are not monomorphemic, since *qui* can potentially be decomposed into *qu-i*, where *-i* is some kind of 'animacy'-marker with wh-phrases and *quel* in *qu-el* (*quel* is derived from Latin **qu-alis*. Cf. also *t-el* 'such' derived from Latin **t-alis*). This paper is interested in the features that are relevant to RM and as such, does not discuss more fine-grained decompositions that can affect these morphemes. I agree that a more detailed analysis should be performed.

c. On imaginait déjà la colline du Pincio en proie à la plus extrême
one imagined already the Hill of.the Pincio in.the grip of the most extreme
agitation, **qui** créant, **qui** animant, **qui** échangeant, **qui** diffusant et
restlessness who spawning who living up who exchanging who spreading and
rayonnant par-delà les monts et les mers.
lightening over the dales and the seas
'We could already imagine the Pincio Hill in the grip of the utmost restlessness, spawning, living up, exchanging, spreading and lightening over the dales and seas.'
(from Grévisse 759, *Le Monde*, July 10 1983, p. 12)

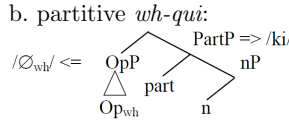
In (42a), *qui* refers to *professors* and is interpreted as partitive (*some of them*). In (42b/c), *qui* does not refer to a term that has been already mentioned, it is *np*. In addition, no interrogative meaning is involved, i.e., no Op_{wh} is involved. It is an indefinite.

Building on Baunaz & Lander (submitted b), I claim that wh-phrases may involve a prefixed non-overt wh-operator. The prefixed operator is built as an independent subtree and has by hypothesis nothing to do with our fseq (see Pantcheva 2011; Starke 2013). I also propose that since the Qs we are looking at are nominal pro-forms, they are basically composed of a nominal feature at their core, a very small bit of structure (see Baunaz & Lander submitted b for a detailed analysis). Specifically *qui* can maximally be decomposed into the universal functional sequence in (43a), where specificity, and partitivity are heads with particular semantic functions. A specific-Q displays the structure in (43a), where the morphological make-up of (43a) reflects a semantic containment relationship between specificity and partitivity; a partitive-Q displays the structure in (43b) and a *np*-Q the structure in (43c). Indefinite *qui* does not involve any Op, but may involve a partitive head (see 42a). (43d) illustrates the syntactic tree for *qui* in (42c/d). We obtain the following structures for each of the Qs studied here:

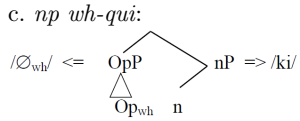
(43) a. specific *wh-qui*:



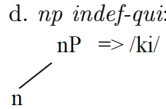
b. partitive *wh-qui*:



c. *np wh-qui*:



d. *np indef-qui*:



All the features belonging to this fseq are taken to be additive. That is, the structures which are built according to the fseq are in subset-superset relations with one another. In (43), there are four syntactic environments. Each semantic property is encoded in a functional head: the presence/absence of a property directly affects the size of the structure.

6.2. Universal Qs (and Universal Quantifiers)

The syntactic structures of Universal Qs is sensibly different from those of *qui*.

First *chacun* is tri-morphemic: it overtly displays a universal (distributive) Operator *cha-*, an undefined element *-c-* and some kind of numeral-like element, *-un* 'one', that agrees in gender with its noun restriction.

I claim that *cha-c-un* involves a prefixed overt universal-operator, $Op_{\forall}$. Just like the non-overt prefixed Op_{wh} in section 6.1, $Op_{\forall}$ is built as an independent subtree.

Cha-c-un also involves *-c-*. To understand what *-c-* is, one needs to look at other quantifiers and compare them with other languages: (some) Romance and Slavic Quantifiers can be compose of an operator **plus** an element that is syncretic with wh-pronouns (i.e., nominal elements) in these languages, like French *que* 'what': *cha-**que**, quel-**que**;* Italian *che* 'what': *cias-**che**-duno, qual-**che***; Serbo-Croatian *što* 'what': *ne-**što*** 'something', etc. Note that depending on its phonological environment this morpheme is pronounced /k/ in French and Italian, with elision of the schwa in French and of /e/ in Italian (cf. Grammont's 1894 Law of Three Consonants), yielding French *cha-**c**-un*, Italian *cias-**c**-uno.* On the basis of these observations, Baunaz & Lander (submitted b) propose that there are morphemes which can be considered a kind of **nominal core** (n), namely a semantically bleached, non-referential functional element. They assume that n is not a full lexical noun (i.e., of category N, such as Fr. *garçon* 'boy') but rather a functional item with a very small structure. The semantic vacuousness of this element can, in addition to its prosodic weakness, be considered another reason to assign it a very small structure. I follow Baunaz & Lander (submitted b) and propose that this *-c-* morpheme is a bound nominal morpheme, *nP*.

Chacun is also composed of a numeral-like element *-un*. Historically, *chacun* derives from < Lat. *quis**que**-unus* and Vulg.Lat. *cascúnum* < Anc.Gk. *kata*). In particular, *cascúnum* results from a crossing between 'each one' and *catúnum* ([*unum*] *cata unum*) 'one by one' (see http://www.cnrtl.fr/etymologie/chacun), i.e., it is a nominal element, just

like Spanish *cada* ***uno***. Fr. *-un* in *cha-c-un* is thus syncretic with the noun *un* 'one'. While the former agrees with the following DP for gender only, not for number, as in (44), the latter can also inflect for number (45):

(44) a. chacun(*-s) des livres
each.one.MASC.SG-PL of.the books

b. chacune(*-s) des filles
each.one.FEM.SG/-PL of.the girls

(45) a. l'un(e) et l'autre
the one.MASC.-FEM.SG and the other

b. les un(e)s et les autres
the ones.MASC.-FEM.PL and the others

Without going into the details of the decomposition of *-un*, that would lead us far beyond the scope of this paper, I propose that *-un* heads a (defective) nominal phrase.[20]

Second *tous* is not the lexicalization of the universal operator alone – like *cha-* is, but of a bigger structure, which includes some sort of gender and number features, (cf. *toutes* 'all.fem.pl.' vs. *tous* 'all.masc.pl.').

Third both *chacun* and *tous* display overt restrictions over which they quantify (*des N* 'of.the N'*; les N* 'the N'). Yet, French is also well-known for being able to float its Universal Qs (Kayne 1975; Sportiche 1988; Doetjes 1997, among others): the availability of Floating Quantifier (FQ) structures depends on the association of a quantifier with its DP associate (*les filles* in (46) and (47)). FQs, like non-FQs, agree in number and gender with the DP they are associated with (see Baunaz 2008; 2011).

(46) a. Toutes les filles ont lu le livre.
all.FEM.PL the girls.FEM.PL have read the book
'All the girls have read the book.'

b. Les filles ont **toutes** lu le livre.
the girl.FEM.PL have all.FEM.PL read the book
'The girls have all read the book.'

[20] We know that *chacun* lacks a Number layer, because it is invariable: when it occupies the subject position, it can never agree in plural with the main verb, only with the default 3rd person:

(i) Chacun des livres a/*ont été acheté.
each.one of.the books has/have been bought

(47) a. Chacune des filles a lu le livre.
each.FEM.SG of.the girls.FEM.PL has read the book
'Each of the girls has read the book.'

b. Les filles ont **chacune** lu le livre.
the girls.FEM.PL have each.FEM.SG read the book
'The girls have each read the book.'

Semantically, FQ and non-FQ structures are truth conditionally equivalent: the universal Q still quantifies over its associate DP (Sportiche 1988, Bobaljik 2003).

Note also that when the restriction and the Univeral Q are separated from each other, locality restrictions are similar (although not identical, see footnote 21) to those described in section 5. As shown in (48), when Q floats, wh-extraction is fine only out of *tous*, not *chacun*. Crucially, the wh-phrase must be specific here, i.e., it can only take wide scope over the collective Universal Q in (48b):[21]

(48) During a trial, witnesses and defendants are confronted. One of the defendants has been accused by all the witnesses. The journalist asks:

a. *Et alors, les témoins ont **chacun** reconnu qui/quel accusé
and so, the witnesses have each recognized whom/which defendant
à l'issue du procès?
after of.the trial

b. Et alors, les témoins ont **tous** reconnu qui/quel accusé
and so the witnesses have all recognized whom/which defendant
à l'issue du procès?
after of.the trial
'And so, whom/which defendant did the witnesses recognized all after the trial?'

[21] I note that in different contexts, floated *chacun* and wh-in-situ can unexpectedly co-occur, with *chacun* distributing over the wh-phrase (i.e., forcing a pair-list reading), as in (i). Crucially the wh-phrase does not scope over the Quantifier, though, which is expected.

(i) Ils ont reçu chacun quel prix?
they have received each which prize
'Which prize did they receive each?'

Why this is so remains unexplained here.

If we force a *np* wh-phrase (with an aggressively non-D-linked wh-*the hell* phrase), then, covert extraction is impossible.[22]

(49) a. *Ah, au fait, qui-diable est-ce que tes amis ont chacun vu hier soir?
'Ah, by the way, who-the-hell you see yesterday evening?'

b. *Ah, au fait, qui-diable tes amis ont tous vu hier soir?
'Ah, by the way, who-the-hell you see yesterday evening?'

Following the logic applied in the previous sections, I claim that *chacun* involves a specificity feature. This means that *chacun* is intrinsically specific and blocks any type of movement (see section 5). *Tous* never involves the specific feature, as it is never *specific*, but because it blocks *np* movement in (49), I would like to propose that it is intrinsically partitive, and thus smaller than *chacun*, by the same logic. I claim that the specificity feature occurs on top of *-un*, as *-un* can get a 'specific' reading (see Beghelli & Stowell 1997, among others, see also section 1), possibly "concording" with the noun restriction. Since features are cumulative, this means that the specificity feature must involve the partitive feature, in the feature composition of this quantifier. *Tous* must also involve a partitive feature (possibly concording with its noun restriction). Yet, *tous* does not display any overt equivalent to *-un* in *cha-c-un* to host the partitive feature. I would like to propose, that there is a non-overt counterpart of *-un* in the internal structure of *tous*. My analysis is based on an approach to FQs that I generalize to non-FQs. It basically says that FQs, like non-FQs, are genuine quantified noun phrases. Doetjes (1997) proposes that FQs are adnominal Qs, selecting a silent element, *pro* (of type *e*), as their restriction (and domain of quantification). The locality and agreement effects observed with FQs are accounted for by *pro*, which syntactically and semantically mediates the relationship between the FQ and its associate DP. FQ binds the trace of the moved DP and syntactic agreement arises.[23] Fitzpatrick (2006) proposes that *-un* in *chacun* lexicalizes *pro* – which only appears with *tous*: *chac-* distributes over its restriction *-un*, while *tous* distributes over *pro.* In the remaining of this section, I propose that FQ and non-FQ structures are identical.

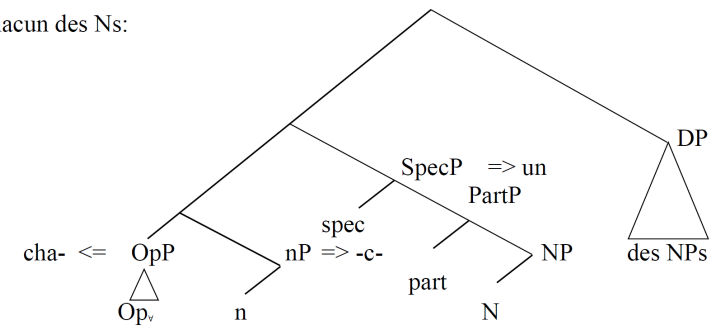
Specifically, *chacun* and *tous* can maximally be decomposed into the universal functional sequences in (50), where specificity, and partitivity

[22] Wh-*diable* phrases cannot occur in-situ in French (Obenauer 1994), instead, its ex-situ counterpart must be used.

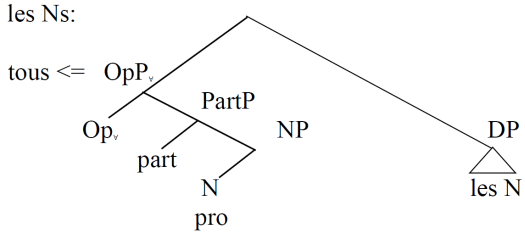
[23] Following Doetjes, Fitzpatrick (2006, 66) claims that "this pronominal element contributes a coreference– like relationship to the nominal associate", in an A position. He proposes that FQ is semantically (and syntactically) equivalent to all of them.

are heads with particular semantic functions. I propose that Universal Qs have nominal structures, where both involve a nominal element (NP) that can be modified by partitive and specific features.[24] The restictions are independently built and somehow suffixed to the whole structures. In FQ structures, the DP-associate moves to an argument position, stranding the Universal Q.

(50) a. chacun des Ns:



b. tous les Ns:



The decomposition of wh-phrases and Universal Qs (i.e., the class of Qs, in Rizzi's terminology) into discrete features naturally leads us toward an analysis of movement (Starke 2009; 2011) and of scope possibilities, where Q-movements reduce to the size of the lexical items built. Given the hierarchy in (41), a Q that has something more than a potential intervener is free to move, whereas a Q that has either something less, or that has a similar feature composition as a potential intervener, will be blocked. In view of this section, having something 'more' means having either having a specific and a partitive feature, or having only a partitive feature. I have argued that the features of specificity and partitivity are hierarchically ordered, in such a way that **specific**, dominates **partitive**. So within the class of

[24] Note that the two Qs involve different types of Ns: with the specific-Q it involves only gender agreement, whereas N with partitive-Q involves gender and Number agreement. I agree that a more detailed analysis of N should be performed, but this is beyond the scope of this paper (see footnote 19).

Qs, specific-Qs are bigger than partitive-Qs, and bare Qs are the smallest. Hence, specific-Qs are absolute blockers, partitive-Qs block partitive and *np* wh-phrases, but not specific-wh-phrases, and *np*-Q (like negation) only block *np* wh-phrases. RM reduces then to the size of Qs. The intervention effects observed in this paper are thus accounted for in terms of (i) the type of features displayed by the relevant phrases (negation; Universal Qs; wh-phrase): Op **plus** either the specific or the partitive feature is what is relevant to RM; (ii) the size of the morphemes involved.

7. Conclusion

In this paper, I have argued for a differential treatment of EP in French. I focused on the relationships between the prosody of wh-phrases and Universal Quantifiers/Qs in French, their interpretation and their syntax. Based on the semantic and prosodic distributions of (syncretic) wh-phrases, I have claimed that EP must be split into specificity and partitivity. This distinction is lexical (or morphological) with Universal Qs, not prosodic: specific-Universal Qs do not (necessarily) get an accent to be interpreted as such. Thanks to the compositionality of semantics tool, we have shown that these features are hierarchically ordered. Generalizing the pattern, each quantifier has been decomposed into distinct hierarchically ordered semantico-syntactic features and I have shown that their interaction created RM effects. Crucially, Q-movements (and scope possibilities) reduce to the size of the lexical items that is built.

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